PRE-DESIGN INVESTIGATION WORK PLAN
Weber-Knapp Company
441 Chandler Street
JAMESTOWN, NEW YORK
NYSDEC BCP SITE NUMBER: C907048

Prepared for: Weber-Knapp Company
441 Chandler Street,
Jamestown, New York

Prepared by: Day Environmental, Inc.
1563 Lyell Avenue
Rochester, New York

Project No. 5635S-19

Date: October 2021

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1.0 INTRODUCTION

This Pre-Design Investigation Work Plan (WP) was prepared by Day Environmental, Inc. (DAY) on behalf of the Weber-Knapp Company (Weber-Knapp) for the property identified as 441 Chandler Street, Jamestown, New York (Site). The Site is currently owned by Weber-Knapp. A Project Locus map is included as Figure 1.

Although the New York State Department of Environmental Conservation (NYSDEC) has not yet issued a Record of Decision (ROD) for the Site (i.e., summarizing the remedial alternative to be implemented at the Site), it is anticipated that a component of the remediation will include extraction and on-site treatment of groundwater to address chlorinated volatile organic compound (chlorinated VOC)-impacted groundwater identified in the apparent source areas of the Site and to ensure contaminated groundwater does not migrate off-site. A secondary objective of this remedial effort is removal and treatment of light non-aqueous phase liquids (LNAPL) and groundwater impacted with 1,4-dioxane. This WP identifies the data needed to complete the initial design of the groundwater extraction and treatment system, and the proposed methods to collect the data required to complete the design of the groundwater extraction/treatment system.

1.1 Site Description

The Site is comprised of approximately 2.65 acres of land, and it is developed with an approximate 105,000 square foot slab-on-grade building originally constructed in about 1910 with subsequent additions through the 1960s. Currently manufacturing, warehousing, and office operations are conducted by Weber-Knapp within the building at the Site. The Site is bound to the north by vacant parcels; east by Allen Street; south by Chandler Street; and west by the Chadakoin River (i.e., the western property boundary of the Site abuts the river). The surrounding parcels include residential properties east of Allen Street (i.e., uphill from the Site); an asphalt-paved parking lot used by Weber-Knapp employees and visitors and a bar/restaurant south of Chandler Street; and the Weber-Knapp plating building/wastewater treatment plant west of the Chadakoin River.

1.2 Site History

Detailed descriptions of the history and use of the Site are included in the documents titled *Remedial Investigation/Remedial Alternatives Analysis Work Plan, Weber Knapp Company, 441 Chandler Street Jamestown, New York, NYSDEC Site # C907048*, prepared by Day Environmental, Inc. and dated January 7, 2020 (RI-RAA Work Plan) and *Remedial Investigation Alternatives Analysis Report, Weber-Knapp Company, 441 Chandler Street, City of Jamestown, Chautauqua County, New York* prepared by Day Environmental, Inc. and dated May 2021 (RI-AA Report). Generally, residential and industrial activities have been conducted on the Site since at least 1902. A vapor degreaser that used a trichloroethene (TCE) based solvent operated in the central portion of the building at the Site between about 1969 and 1993.

1.3 Subsurface Conditions

Based upon the test borings advanced on the Site to date, the overburden ranges in thickness from between around 9 feet (ft.) along the east-central border to greater than 50 ft. near the western border.

Generally, between about 2 ft. and 9.5 ft. of heterogeneous fill material consisting of re-worked soil intermixed with anthropogenic materials (e.g., ash, cinders, coal fragments, concrete and brick fragments, etc.) underlie an approximate 0.5 ft. to 1.0 ft. thick layer of building slab or asphalt/concrete pavement. The indigenous soil beneath the fill generally thickens from east to west, and typically consists of stratified drift comprised of outwash and kame deposits consisting primarily of silt and sand with lesser amounts of gravel in some locations. In the central and western portions of the Site, a unit of gray glacial till is present beneath the shallow indigenous soil. This gray glacial till transitions to a red to tan-brown glacial till and then to a gray-green glacial till as the overburden thickens to the west.

The rock underlying the overburden is comprised of Upper Devonian period medium gray siltstone with some inter-bedded medium gray shale. Typically, the upper 3 to 6 ft. of the bedrock surface is weathered and fractured likely due to glacial scour. The rock competency improves with depth.

The depth to overburden and bedrock groundwater at the Site varies seasonally. Depending on location, the depth to groundwater in the overburden was measured at depths ranging from about 1.9 ft. below ground surface (bgs) to 10.7 ft. bgs, and about 3.2 ft. bgs to 10.8 ft. bgs in the bedrock. Using the range of calculated hydraulic conductivities, the average horizontal gradients and estimated effective porosities, the following groundwater flow rates were calculated: between about 0.005 ft./day and 0.104 ft./day in overburden soil positioned above the glacial till; between about 0.009 ft./day and 0.189 ft./day in the glacial till; and between about 0.020 ft./day and 0.055 ft./day in the bedrock.

Test boring logs, monitoring well installation diagrams, and summary tables of analytical data are provided in the RI-AA Report.

1.4 Applicable Project Standards, Criteria, Guidance and Reference Documents

Applicable standards, criteria, and guidance (SCG) values and reference documents that will be used for this project are outlined below:

- Appropriate Soil Cleanup Objectives (SCOs) and other guidance as set forth in 6 NYCRR Part 375-2 Inactive Hazardous Waste Disposal Program dated December 14, 2006. Appropriate SCOs for this Site are the Protection of Groundwater SCOs and Restricted Industrial Use SCOs.

- Appropriate Soil Cleanup Levels (SCL) and other guidance as set forth in NYSDEC CP-51 Soil Cleanup Guidance dated October 21, 2010.

- Guidelines referenced in the NYSDEC document titled “DER-10 Technical Guidance for Site Investigation and Remediation” dated May 10, 2010.

- Appropriate water quality standards and guidance values (WQS/GV) as set forth in the NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) document titled “Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations” dated June 1998, and amended by a January 1999 Errata Sheet, an April 2000 Addendum, and a June 2004 Addendum.

- Appropriate guidelines, procedures and attachments as set forth in the RI-RAA Work Plan (i.e., Health and Safety Plan, CAMP and QAPP).

- City of Jamestown Board of Public Utilities (BPU) Industrial Waste Discharge Permit requirements.

The work described in this WP will be performed in accordance with the SCGs and reference documents listed above.

2.0 GROUNDWATER IMPACTS AND STUDY OBJECTIVES

This section summarizes the areas of the Site where groundwater impacted with chlorinated VOC, LNAPL, and 1,4-dioxane have been identified and require remediation. In addition, this section presents means and methods to collect the data required to complete the design of the groundwater extraction and treatment system to address the identified groundwater impacts and the objectives of the proposed studies.

2.1 Groundwater Impacts

The primary contaminants of concern (COC) for the Site are the chlorinated VOC. Specifically, TCE and its associated degradation products [e.g., cis-1,2-dichloroethene (DCE), vinyl chloride, etc.]. Overburden groundwater impacted by chlorinated VOC is present in the vicinity of the former vapor degreaser, in proximity of stormwater drain lines west of the former vapor degreaser, and within bedrock groundwater northeast of the former vapor degreaser. Two secondary source areas of chlorinated VOC impact to soil, overburden groundwater and/or bedrock groundwater were identified at the Site. These include: (1) in the receiving/parking lot near the southern edge of the building in the southeastern portion of the Site and (2) in the vicinity of the current Laser Cutting Department in the northwestern portion of the building.

1,4-dioxane was measured at concentrations in excess of the maximum contaminant level (MCL) in drinking water (i.e., used as a screening value for groundwater) in overburden and bedrock groundwater samples collected during one or both rounds of groundwater sampling conducted during the 2020 RI study. The source of the 1,4-dioxane is unknown but, it is suspected that 1,4-dioxane was a component of the solvent used in the former vapor degreaser based on its consistent presence in groundwater samples collected from the area of the former vapor degreaser.

LNAPL (i.e., petroleum products) was measured in some of the monitoring wells installed at the Site during the 2020 RI study. The only potential petroleum-related constituent that was identified in the groundwater samples tested at concentrations exceeding Groundwater Standards or Guidance Values was toluene in samples collected from monitoring well MW-12 (i.e., located near the western border of the Site). The suspected source of the LNAPL observed in the vicinity of the former vapor degreaser is spillage/leakage from the degreasing operation, which migrated through drainage structures and/or the concrete floor of the building. Sources of LNAPL observed in the other areas of the Site have not been determined. However, the impacts to soil and/or groundwater that where observed appear to be localized and not indicative of large plume areas.

To address the chlorinated VOC and 1,4-dioxane concentrations identified in the groundwater in the area of the former vapor degreaser, groundwater extraction will be completed to remove chlorinated VOC mass and contain the existing chlorinated VOC plume. Additional groundwater extraction will also be completed in secondary source areas (i.e., down-gradient from the receiving/parking lot near the southern edge of the building in the southeastern portion of the Site and in the vicinity of the current Laser Cutting Department in the northwestern portion of the building) to aid in groundwater plume containment. LNAPL will be addressed via installation of sorbent media and/or pumping in/from the monitoring wells where LNAPL is encountered. However, it is anticipated that the groundwater

extraction component of the remedy will promote the migration of localized LNAPL toward the extraction wells.

2.2 Data Required for Remedial Design/Remedial Action Work Plan Development

A summary of select field activities and data acquisition requirements associated with this WP is presented in this section. The methods proposed to implement these activities are presented in Section 3.

- Extraction Well Installation: Two overburden groundwater extraction wells (designated EW-1 and EW-2) advanced into the top of the red to tan-brown glacial till layer (i.e., around elevation 1,273 ft. above mean sea level - amsl) will be installed using rotary drilling techniques. These wells will be constructed of four-inch diameter PVC casing and screen materials. Refer to Figure 2 for the proposed locations of the overburden extraction wells EW-1 and EW-2 and Figure 3 for groundwater monitoring well design specifications.

- Monitoring Well Installation: Four glacial till zone overburden groundwater monitoring wells (designated MW-15, MW-16, MW-17 and MW-18), one upper overburden monitoring well (designated MW-19) and four bedrock monitoring wells (designated MW-20, MW-21, MW-22 and MW-23) will be installed. Refer to Figure 2 for the proposed locations of the above groundwater monitoring wells and Figures 4-6 for groundwater monitoring well design specifications. Additional information for each monitoring well is provided below:

    - MW-15 will be installed in the top of the red-brown glacial till layer (i.e., around elevation 1,273 ft. amsl) and constructed of two-inch diameter PVC casing and screen materials. This monitoring well will be installed in proximity to, and north of, extraction well EW-1.

    - MW-16 will be installed in the top of red to tan-brown glacial till layer (i.e., around elevation 1,273 ft. amsl) and constructed of two-inch diameter PVC casing and screen materials. This monitoring well will be installed in proximity to, and southeast of, extraction well EW-1.

    - MW-17 will be installed in the top of the red to tan-brown glacial till layer (i.e., around elevation 1,273 ft. amsl) and constructed of two-inch diameter PVC casing and screen materials. This monitoring well will be installed in proximity to, and northeast of, extraction well EW-2.

    - MW-18 will be installed in the top of the red to tan-brown glacial till layer (i.e., around elevation 1,274 ft. amsl) and constructed of two-inch diameter PVC casing and screen materials. This monitoring well will be installed in proximity to, and southwest of, extraction well EW-2.

    - MW-19 will be installed in the top of the bedrock (i.e., around elevation 1,287 ft. amsl) and constructed of two-inch diameter PVC casing and screen materials. This monitoring well will be installed in the Allen Street Right-of-Way (ROW) in proximity to proposed monitoring well MW-20.

- MW-20 will be installed in the upper bedrock zone (i.e., around elevation 1,275 ft. amsl). A continuous four-inch diameter steel casing will be installed, extending from the ground surface to several feet into the bedrock, below which an open-hole well will be constructed using HQ-sized coring equipment. This monitoring well will be installed in the Allen Street ROW in proximity to proposed monitoring well MW-19.

- MW-21 will be installed in the upper bedrock zone (i.e., around elevation 1,275 ft. amsl). A continuous four-inch diameter steel casing will be installed, extending from the ground surface to several feet into the bedrock, below which an open-hole well will be constructed using HQ-sized coring equipment. This monitoring well will be installed in the Allen Street ROW, to the east of existing bedrock zone monitoring well MW-07.

- MW-22 will be installed in the upper bedrock zone (i.e., around elevation 1,273 ft. amsl). A continuous four-inch diameter steel casing will be installed, extending from the ground surface to several feet into the bedrock, below which an open-hole well will be constructed using HQ-sized coring equipment. This monitoring well will be installed in the Allen Street ROW, to the northeast of existing bedrock zone monitoring well MW-07.

- MW-23 will be installed in the upper bedrock zone (i.e., around elevation 1,264 ft. amsl). A continuous four-inch diameter steel casing will be installed, extending from the floor surface to several feet into the bedrock, below which an open-hole well will be constructed using HQ-sized coring equipment. This monitoring well will be installed in proximity to, and to the west of, existing bedrock zone monitoring well MW-07.

Following installation and development of the proposed monitoring wells and extraction wells slug tests will be conducted in the newly installed monitoring wells, and pump testing will be completed at three locations (i.e., proposed extraction wells EW-1, EW-2, and existing bedrock zone monitoring well MW-7) to assess hydraulic parameters, pumping rates, static water level drawdown, and the apparent radius of influence (ROI) created by the pumping. It is recognized that the effective capture zone may be less than the radius of influence, and cannot be easily delineated using a single method. The effective capture zone will be estimated using multiple lines of converging evidence including observed ROI, groundwater potentiometric surface modeling, and width of capture zone calculations. To aid in the evaluation of the capture zone shape and magnitude, monitoring wells in proximity to EW-1, EW-2, and MW-7 will be monitored during the pump tests. The data collected (i.e., hydrogeologic data, pump test results, etc.) will be evaluated during the design of the groundwater extraction and treatment system and included in the Remedial Action Work Plan (RAWP). The RAWP will include installation procedures for additional extraction wells (if required) and the proposed groundwater treatment system; system start-up and operating recommendations; a description of the proposed system monitoring (e.g., groundwater monitoring wells to be evaluated and discharge/treated groundwater monitoring); and an implementation and reporting schedule.

2.3 Work Plan Objectives

This WP presents the scope of work necessary to obtain the data required for the completion of the groundwater extraction and treatment system design. Following completion of the scope of work presented in this WP, a detailed design (i.e., RAWP) for the groundwater extraction and treatment system will be completed.

The objectives of this WP are described below.

- Produce data of sufficient quantity and quality for RAWP development.
- Establish groundwater level and flow conditions for use as a baseline condition.
- Evaluate the influences of groundwater extraction on groundwater flow, LNAPL migration and static groundwater levels relative to the baseline condition.
- Define hydrogeological factors (e.g., groundwater flow, response of the groundwater extraction, depth to the saturated zone, hydrologic gradients, and hydraulic conductivity).

3.0 SCOPE

Two groundwater extraction wells (designated EW-1 and EW-2) and nine monitoring wells (designated MW-15 through MW-23) will be installed and developed in accordance with this work plan. Subsequently, testing will be completed to establish various hydraulic parameters pursuant to the design and construction of a remedial system intended to collect/treat groundwater impacted with chlorinated VOCs and 1,4-dioxane. In addition, areas of localized LNAPL (i.e., where encountered in monitoring wells) will be evaluated. The implementation of the scope defined in this WP will follow the site-specific Health and Safety Plan, the Community Air Monitoring program (CAMP) and the Quality Assurance Project Plan (QAPP) included in the RI-RAA Work Plan

3.1 Installation of Groundwater Extraction Wells and Monitoring wells

DAY will retain the services of a subcontractor to provide a rotary drill-rig, crew and materials to install extraction and monitoring wells. The extraction wells (EW-1 and EW-2) and bedrock zone monitoring wells (MW-20 through MW-23) will be drilled using 6.25-inch inside diameter (ID) hollow stem augers (HSA) to advance the boring. Glacial till zone and upper overburden zone monitoring wells (MW-15 through MW-19) will be drilled using 4.25-inch ID HSA to advance the boring. At each location, overburden samples will be collected ahead of the augers using a split spoon sampling device driven with a 140-pound hammer free-falling 30 inches in general conformance with ASTM 1586, or by direct push sampling methods. The borings will be sampled to auger refusal or to the target completion depths (refer to Section 2.2).

Extraction well EW-1 and EW-2 will be completed using 4-inch ID PVC, with 10 ft. of No. 20 slot screen beginning at the bottom of the borehole and flush-coupled PVC risers extending to ground surface. Groundwater monitoring wells MW-15 through MW-19 will be completed using 2-inch ID PVC, with 10 ft. of No. 20 slot screen beginning at the bottom of the borehole and flush-coupled PVC risers extending to ground surface. The annulus around the well screens will be filled with a washed and graded silica sand pack that will be placed at least two feet above the top of the screened interval. A minimum one-foot thick bentonite seal will be placed above the sand pack and hydrated with potable water. Following hydration of the bentonite, the remaining annulus will be filled with cement/bentonite grout consisting of approximately 96% Portland type 1 (or similar) cement and 4% granular bentonite mixture, and water. The cement/bentonite grout will be tremied into the well annulus to approximately one foot below grade. A curb box with locking cap will be placed over each well and cemented in-place.

Following auger refusal in bedrock zone monitoring wells MW-20 through MW-23, an approximate 2-foot rock socket will be advanced into competent bedrock using a roller bit (if necessary) to accommodate a 4-inch steel surface casing, which will be grouted in place and allowed to set for a minimum of 24 hours. The bedrock zone monitoring wells will subsequently be cored approximately 10 ft. below the surface casing using an appropriate-sized core barrel. These bedrock wells will be completed as open-hole wells. A curb box with locking cap will be placed over each well and cemented in-place.

Information recorded during the advancement of extraction wells and monitoring wells will include:

- Date, boring identification, and project identification.
- Name of individual developing the log.
- Name of drilling company.
- Drill make and model.
- Identification of any alternative drilling methods used.
- Depths recorded in feet and fractions thereof (tenths of feet) referenced to ground surface.
- The length of the sample interval and percentage of sample recovered.
- The depth of the first encountered water table, along with the method of determination, referenced to the ground surface.
- Drilling and borehole characteristics.
- The presence of LNAPL (if encountered).
- Sequential stratigraphic boundaries.
- Photoionization Detector (PID) screening results of ambient headspace air above selected samples.
- Amount of water (if any) lost in a borehole during coring.

A temporary decontamination pad will be constructed to decontaminate "in-hole" drilling equipment by steam cleaning. The decontamination liquids will be pumped into NYSDOT-approved 55-gallon drums, 275-gallon totes or similar, or a holding tank, that are labeled and staged on-site in accordance with applicable regulations for future treatment/disposal. In addition, the soils, drilling liquids, and decontamination pad will also be containerized in NYSDOT-approved 55-gallon drums that are labeled and staged on site in accordance with applicable regulations for future treatment/disposal.

3.2 Development of Groundwater Extraction Wells and Monitoring Wells

At least two days following installation, each of the newly installed wells will be developed in accordance with the protocols outlined in the QAPP in preparation for subsequent testing. The development water will be containerized, labeled and staged on-site in accordance with applicable regulations for treatment/disposal. Dependent on the volume of water introduced during the well installation, development will continue until a comparable volume of water is removed from the well. Alternatively, if the amount of water introduced during the well installation is too great, DAY may wait three to four weeks for the water to dissipate into the aquifer prior to performing well development.

3.4 Hydraulic Conductivity Testing

Subsequent to development and a return to steady-state static water level conditions, in-situ hydraulic conductivity testing will be completed in the extraction wells (EW-1 and EW-2) and each of the newly installed monitoring wells (MW-15 through MW-23). The results of this testing will be used to assist in the selection of appropriate pumping rates and to compare the hydraulic conductivity measured in other site monitoring wells.

Slug tests will be conducted by both inserting and removing the slug. Each slug test will be conducted by instantaneously changing the water level in a monitoring well by the introduction ("slug in"), and subsequent removal ("slug out"), of a non-reactive solid and sealed PVC pipe, ("the slug"), and measuring the aquifer's response to the changing water-level over time. Removal of the slug will be conducted only after the well had receded to 95% of the original measured static water level. The slug test procedures are described in: Bouwer, H., 1989; "The Bouwer and Rice Slug Test-An Update",

Groundwater, vol. 27, no. 3, pp. 304-309; and the original Bouwer, H and R.C. Rice 1976 article in the Water Resources Research Journal.

The slug-in and slug-out test data (groundwater levels over time) will be recorded using a Level TROLL 700 data logger or similar, or by recording groundwater levels over time using a stopwatch and a Heron H.Oil Oil/Water Interface probe. The slug test data will be imported to AqteSolv software, or similar, to calculate hydraulic conductivities at each well. The hydraulic conductivity data will be used to evaluate the local groundwater velocity combined with potentiometric data gathered at the Site.

3.5 Pumping Tests

The goal of the testing described herein is to evaluate the associated radius of influence that can be achieved at various pumping rates to assist in identifying the placement and number of extraction wells required to contain the on-site groundwater plume.

Initially, static water levels will be recorded for extraction wells EW-1 and EW-2, bedrock zone monitoring well MW-07 and nearby monitoring wells to establish background conditions. The monitoring and extraction wells that will be observed prior to and during the pumping test are depicted on Figure 7. Where LNAPL is present in monitoring wells, the LNAPL thickness will be measured using an oil-water interface probe. Thereafter, a discrete step drawdown pumping test will be done at each extraction well (i.e., EW-1 and EW-2) and at bedrock zone monitoring well MW-07. As necessary, pumping tests may be completed with the pumping of multiple extraction wells at the same time to assess site-wide impacts. Discharge rates from the wells under evaluation will be slowly increased until an approximate 5-foot drawdown is maintained or the water column has been reduced by approximately 50% of the initially measured (i.e., background) saturated zone thickness. Thereafter pumping rates will be increased (i.e., stepped up) depending upon the drawdowns measured in the target well and the nearby monitoring locations. The maximum pumping rate will be achieved when the pump is installed in proximity to the bottom of the well and stabilized static water level conditions are maintained less than 12-inches above the pump intake without reducing the static water level below the pump intake. It is anticipated that each discharge rate will be maintained during the pumping test for a minimum of two hours; however, modifications may be made in the field with concurrence from the NYSDEC site representative. The water levels in EW-1, EW-2, MW-07 and in nearby monitoring wells will be measured every fifteen minutes, or less (depending on site conditions and drawdown rates) during the pump tests, and the thickness of LNAPL (where encountered) will also be measured at approximate fifteen-minute intervals. The pumping tests will be evaluated to estimate the amount of groundwater that can be extracted from each well and the maximum pumping rate that can be achieved under constant pumping conditions. The data collected during the pumping tests will include:

- Date
- Location of well
- Person performing test
- Initial static water levels in extraction and monitoring wells
- Initial LNAPL thickness (where encountered)
- Drawdown measurements, time of measurements and flow rate
- Static water levels and time of measurement after groundwater extraction
- LNAPL thickness (where encountered) and time of measurement after groundwater extraction

- Estimated characteristics of the aquifer and assessment of effects

The data loggers, static water level meter, the interface probe and other reusable well monitoring equipment will be decontaminated prior to being used at any given location by implementing the following procedures: 1) initial wash in tap water; 2) wash in mixture of tap water and alconox soap or equivalent; 3) double rinse with tap water and 4) air dry and/or dry with clean paper towel.

The water extracted during the pumping tests will be placed in a collection tank(s) sized depending upon the amount of water collected.

3.6 Surveying and Groundwater Potentiometric Surface Evaluation

The locations of the newly installed extraction wells and monitoring wells will be established using GPS and/or swing tie measurements. The elevations of the newly installed extraction wells and monitoring wells will be measured in reference to an existing monitoring well. During applicable field activities static groundwater measurements will be collected using an electronic static water level meter or an oil/water interface meter. Static water-level measurements may also be obtained during other portions of the WP scope, such as during the hydraulic conductivity testing activities. Groundwater elevations will be calculated and corresponding potentiometric groundwater contour maps will be prepared illustrating the approximate groundwater elevations and groundwater flow direction(s).

3.7 Investigation and Study-Derived Wastes

It is anticipated that solid and liquid investigation and study-derived wastes (IDW) will be generated during the WP. IDW will be managed in general accordance with the applicable provisions set forth of DER-10 Section 3.3(e). The method for handling, characterization, and disposal of IDW is described below.

- Potentially contaminated liquid wastes will likely include: decontamination water, drilling water, well development water, purge water and water extracted during pumping test. Storage of liquid IDW will be generally collected in NYSDOT-approved 55-gallon drums, 275-gallon totes or a collection tank(s), which will be stored on the Site in a secure location. Soil and liquids that are grossly contaminated or suspected to contain NAPL will be placed in separate NYSDOT-approved 55-gallon drums, stored in an area with secondary containment, and labeled accordingly. It is anticipated that liquid IDW will be discharged to the City of Jamestown BPU sanitary sewer system under the existing Industrial Waste Discharge Permit, following pre-treatment through a Granular Activated Carbon (GAC) filter followed by treatment in the facilities waste water treatment plant (located in the adjoining building located at 415 Chandler Street); however, management of liquid IDW may be modified based on the requirements of City of Jamestown BPU.

- Potentially contaminated solid wastes will likely include soil cuttings and excess grout from rotary drilling operations. It is anticipated that the solid IDW will be placed in NYSDOT-approved 55-gallon drums. Solids that are grossly contaminated or suspected to contain NAPL

will be placed in separate drums and labeled accordingly. The IDW solids will be characterized and disposed off-site in accordance with applicable regulations.

3.8 Data Evaluation and Design

The data collected during the pumping test will be compiled and reviewed to determine the pumping rate necessary to achieve the optimum radius of influence to contain the COC plume and remove/contain the apparent source areas of groundwater impact. The LNAPL thickness data will be evaluated to determine potential effects of pumping on LNAPL migration. In addition, the results of the testing presented herein will be evaluated to determine various hydraulic parameters (e.g., groundwater velocity, hydraulic conductivity, etc.), which will be useful in assessing groundwater and dissolved contaminant flow characteristics. This evaluation will also determine if additional extraction wells are required, and, if so, the optimum location and pumping rates of those additional extraction wells.

Once sufficient and acceptable data is generated, a RAWP will be prepared describing the remedial actions to be implemented at the Site. The primary objective of the groundwater extraction and treatment system portion of the RAWP will be to provide containment and treatment of the COC groundwater plume. In addition, this portion of the RAWP will consider the removal and treatment of LNAPL and 1,4-dioxane, but these are secondary to removal, containment and treatment of chlorinated VOCs.

The RAWP will include a description of the work completed (i.e., hydraulic conductivity results, pump test results, etc.). The RAWP will also include a discussion of optimal pumping rates and the anticipated radius of influence that will be achieved at the Site; the design of the pump and treat system, including treatment system specifications (e.g., pump sizes, treatment train sequence, component sizing, etc.); the proposed location and installation of the groundwater pumping system; and, treatment effectiveness monitoring. The RAWP will also include a discussion of installation and monitoring requirements for other remedial methods proposed for the Site (e.g., vapor mitigation methods, closure and re-routing of the storm sewer system, remediation of impacted sediments identified within the Chadakoin River, etc.).

4.0 SCHEDULE

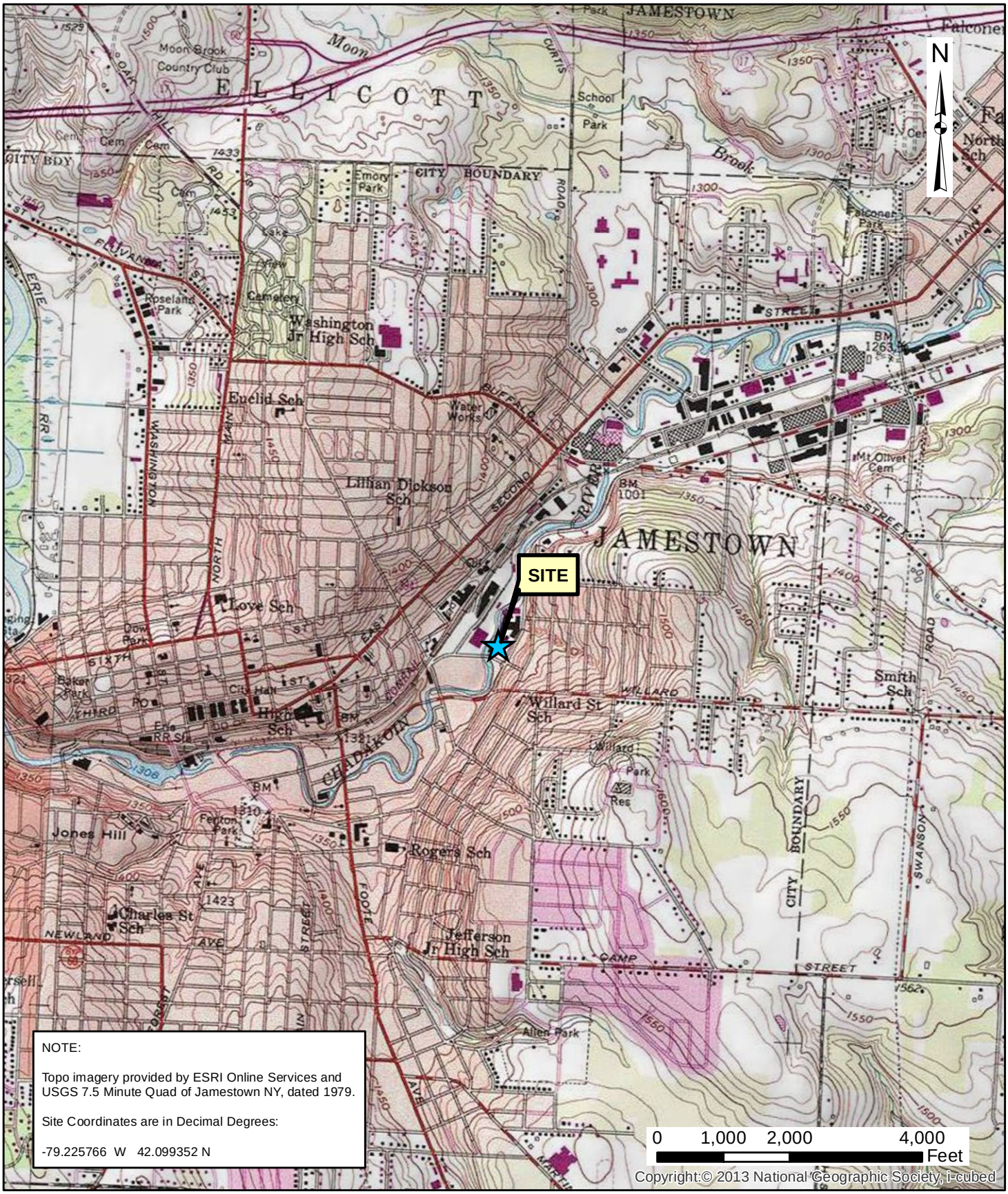
The project schedule for the scope of work described in this WP is summarized below.

Task	Duration (weeks)	Completion Date *
Contractor Selection, Well Installation and Well Development.	4	4
Groundwater Sampling, Slug Tests, Site Survey, Step Draw-Down Pump Tests and Data Evaluation	6	10
Prepare and submit RAWP to the NYSDEC for review	10	24

** Weeks following NYSDEC approval of the WP. Note: Schedule depends on contractor availability*

The NYSDEC will be notified and consulted regarding any deviations from this schedule.

Figures



NOTE:

Topo imagery provided by ESRI Online Services and USGS 7.5 Minute Quad of Jamestown NY, dated 1979.

Site Coordinates are in Decimal Degrees:

-79.225766 W 42.099352 N

Document Path: E:\GIS Mapping\Weber-Knapp\5635S-19\Weber\Remediation WPs\Containment Wall\5635S-21 Locus_441 Chandler St 2021-09.mxd

Last Date Saved: 21 Sep 2021

Date: 09-21-2021 Drawn By: CAH Scale: AS NOTED	day **DAY ENVIRONMENTAL, INC.** **Environmental Consultants** **Rochester, New York 14606** **New York, New York 10170**	Project Title: 441 CHANDLER STREET JAMESTOWN, NEW YORK NYSDEC SITE ID C907048 Drawing Title: Project Locus Map	Project No. 5635S-19 FIGURE 1

Legend

- Proposed Extraction Well (Glacial Till Zone)
- Proposed Bedrock Monitoring Well
- Proposed Glacial Till Zone Monitoring Well
- Proposed Upper Overburden Monitoring Well
- Parcel Boundary

0 20 40 80 Feet

MW-15
EW-1
MW-16
MW-23
MW-22
MW-21
MW-17
EW-2
MW-19
MW-20
MW-18

Allen Street

NOTES:

Property boundary based on information presented on a property survey map titled, "Map of a survey for Weber-Knapp Company, 415 and 441 Chandler Street, City of Jamestown, County of Chautauqua, State of New York", dated August 16, 2011, prepared by Rodgers Land Surveying, 583 Falconer St., Jamestown, NY.

Aerial imagery provided by the New York State GIS Clearinghouse, date 2016

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NYS ITS GIS Program Office

Last Date Saved: 21 Sep 2021 Document Path: E:\GIS Mapping\Weber-Knapp\5635S-19\Weber\Remediation_WP\sContainment_Well\5635S-01 Proposed Wells- Pumptest 2021-09.mxd

DESIGNED BY	CAH
DATE	09-2021
DRAWN BY	CAH
DATE DRAWN	09-2021
SCALE	AS NOTED
DATE ISSUED	09-03-2021

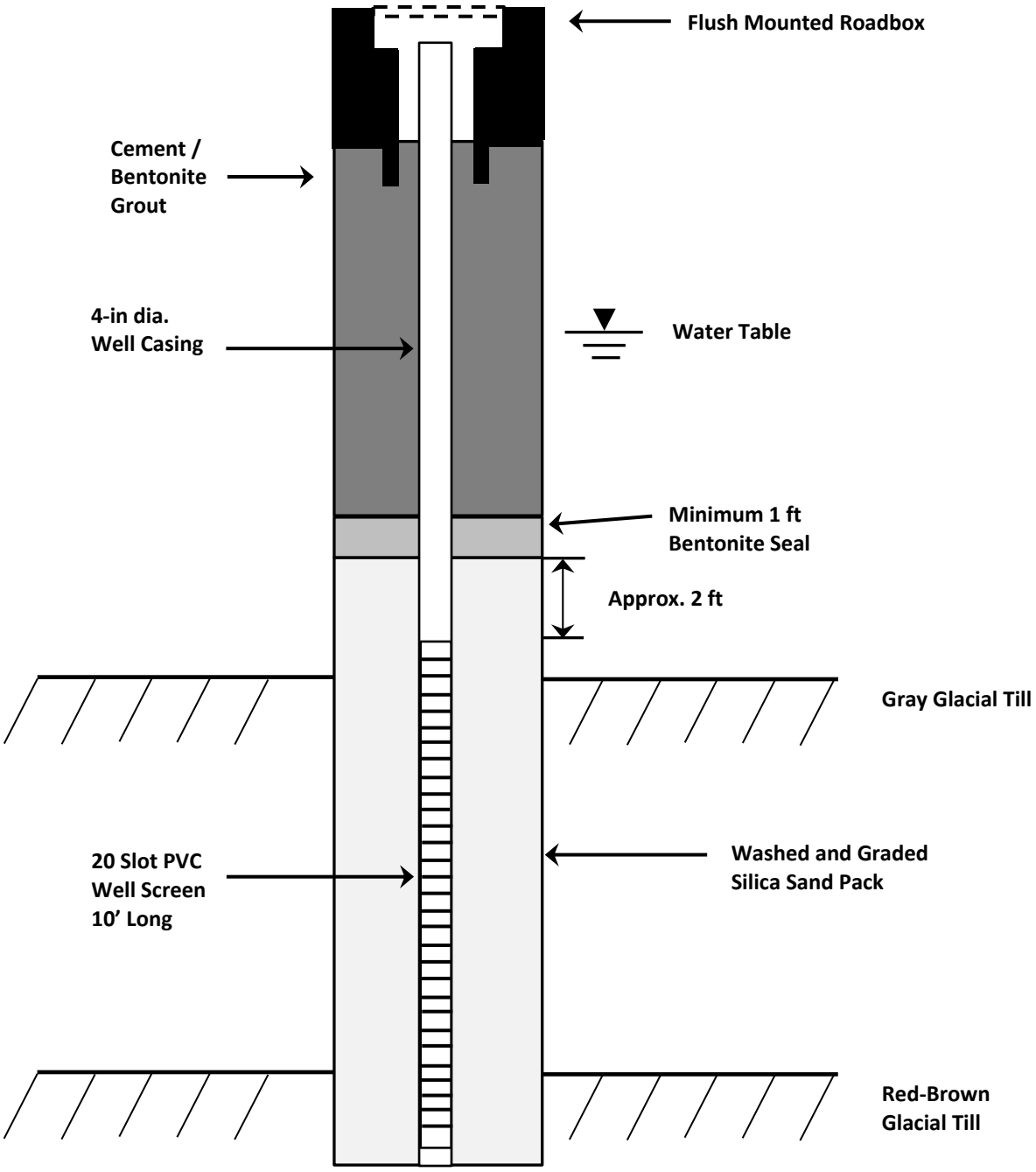
day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14606

Project Title
441 CHANDLER STREET
JAMESTOWN, NEW YORK
NYSDEC SITE ID C907048

Drawing Title
Proposed Monitoring and Extraction Well Locations

Project No.
5635S-19

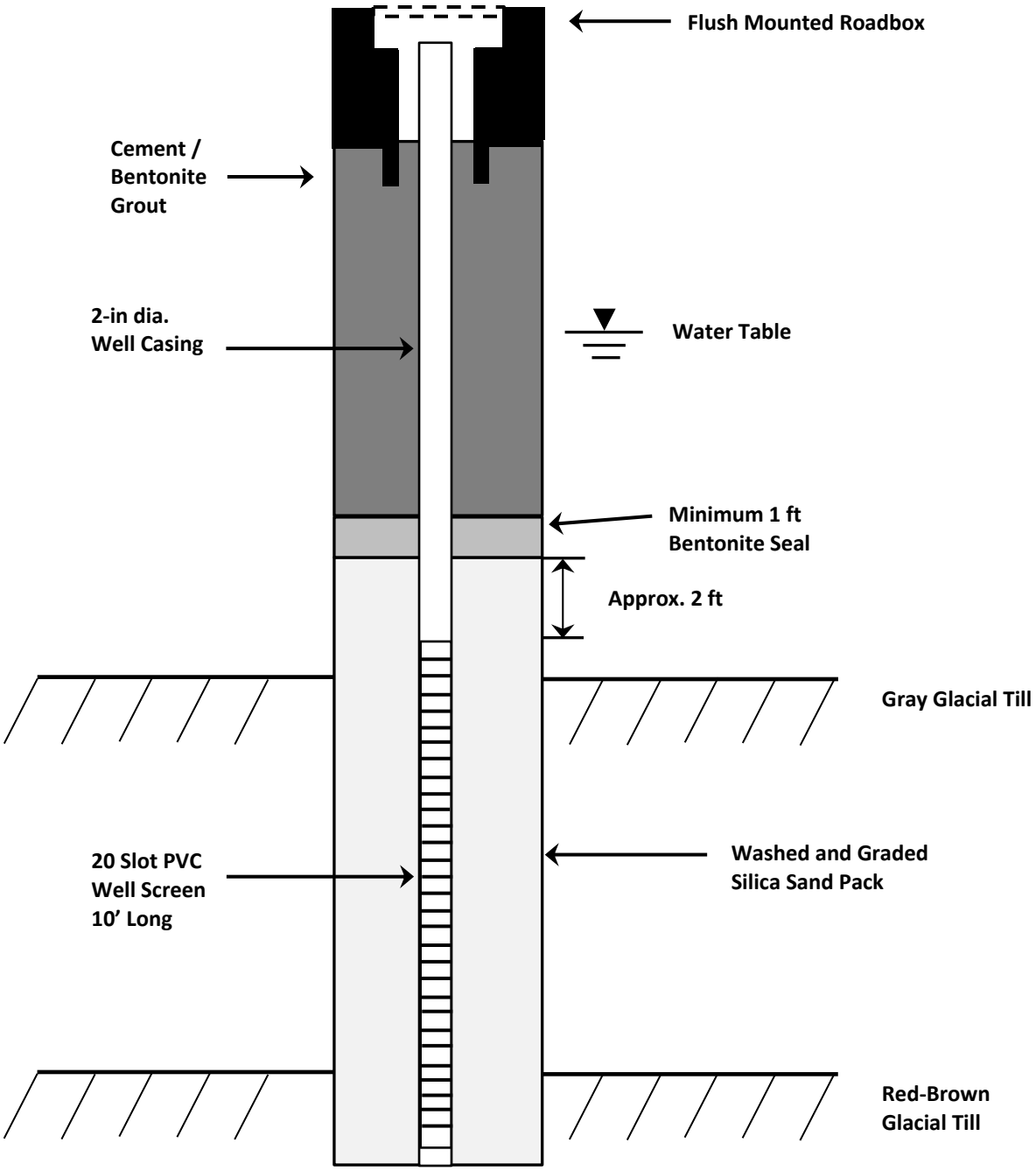
FIGURE 2



NOT TO SCALE

F:\Clients - Major\Weber-Knapp\5635S-19\Pump Test Work Plan

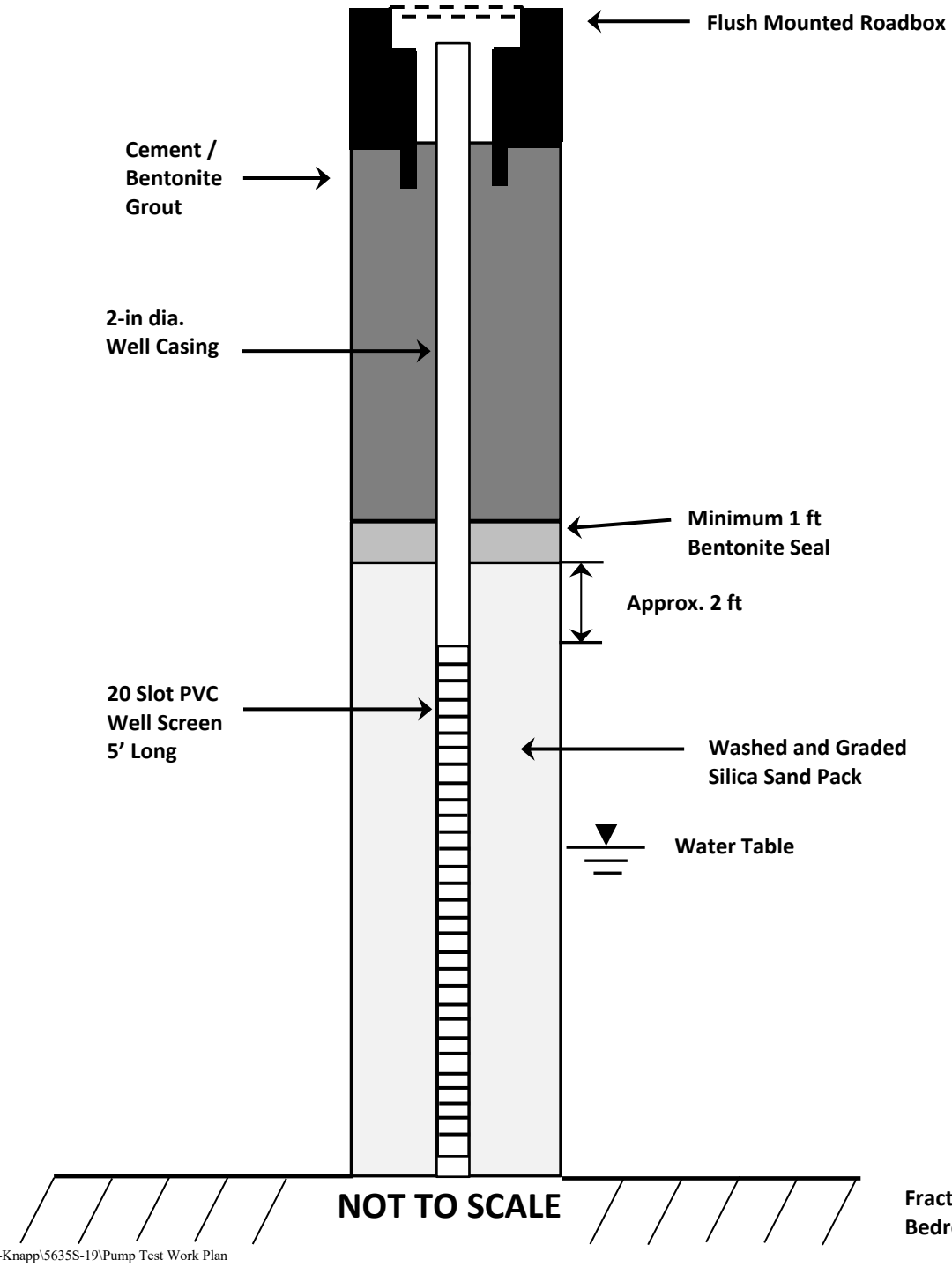
DATE 9-21-2021 DRAWN BY CAH SCALE Not to Scale	day DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14606	PROJECT TITLE 441 CHANDLER STREET JAMESTOWN, NEW YORK NYSDEC SITE ID C907048 DRAWING TITLE Schematic of Extraction Well Construction	PROJECT NO. 5635S-19 FIGURE 3



NOT TO SCALE

F:\Clients - Major\Weber-Knapp\5635S-19\Pump Test Work Plan

DATE 9-21-2021 DRAWN BY CAH SCALE Not to Scale	day DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14606	PROJECT TITLE 441 CHANDLER STREET JAMESTOWN, NEW YORK NYSDEC SITE ID C907048 DRAWING TITLE Schematic of Glacial Till Zone Monitoring Well Construction	PROJECT NO. 5635S-19 FIGURE 4



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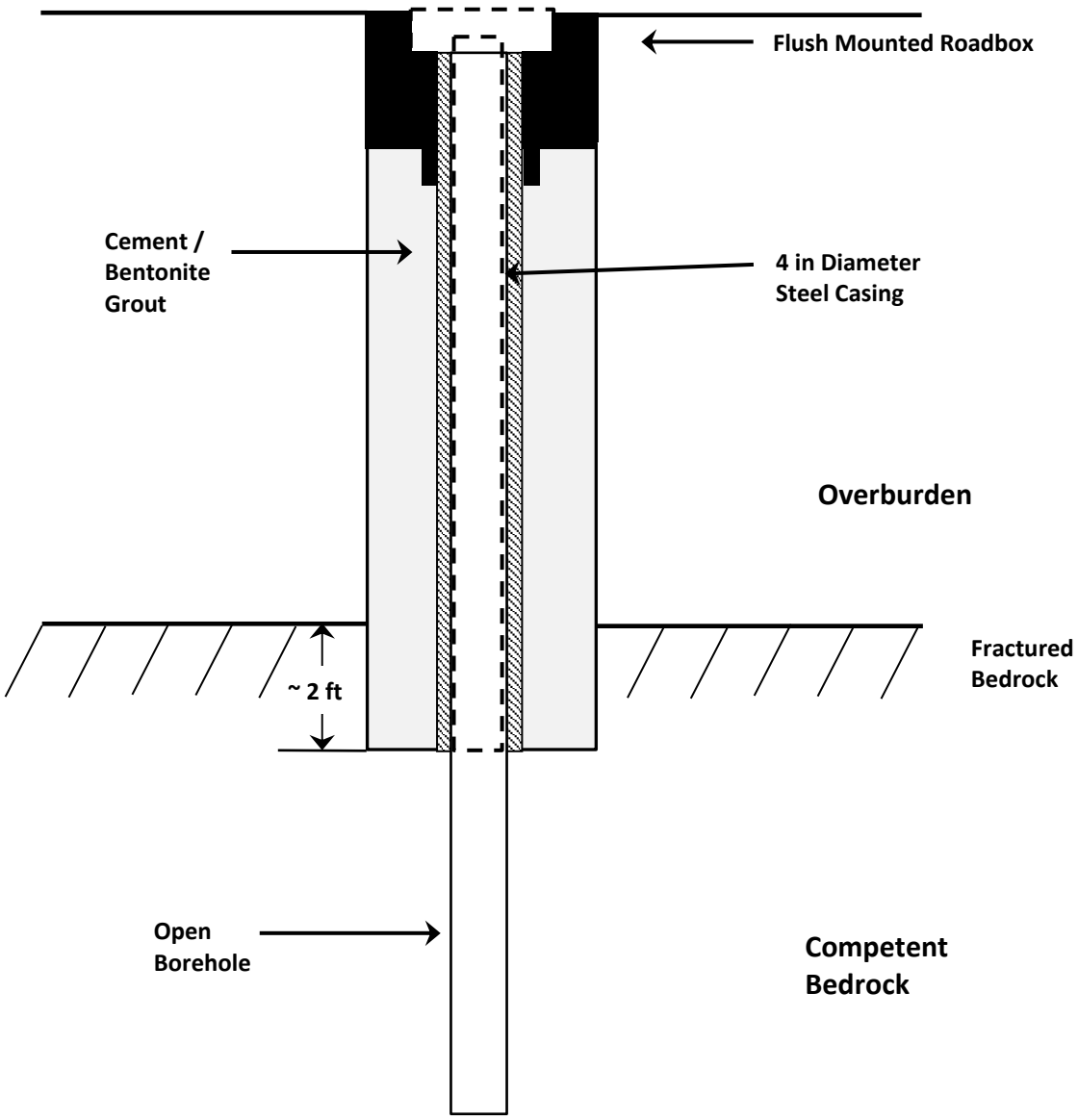
DATE 9-21-2021 DRAWN BY CAH SCALE Not to Scale	day DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14606	PROJECT TITLE 441 CHANDLER STREET JAMESTOWN, NEW YORK NYSDEC SITE ID C907048 DRAWING TITLE Schematic of Upper Overburden Monitoring Well Construction	PROJECT NO. 5635S-19 FIGURE 5



NOT TO SCALE

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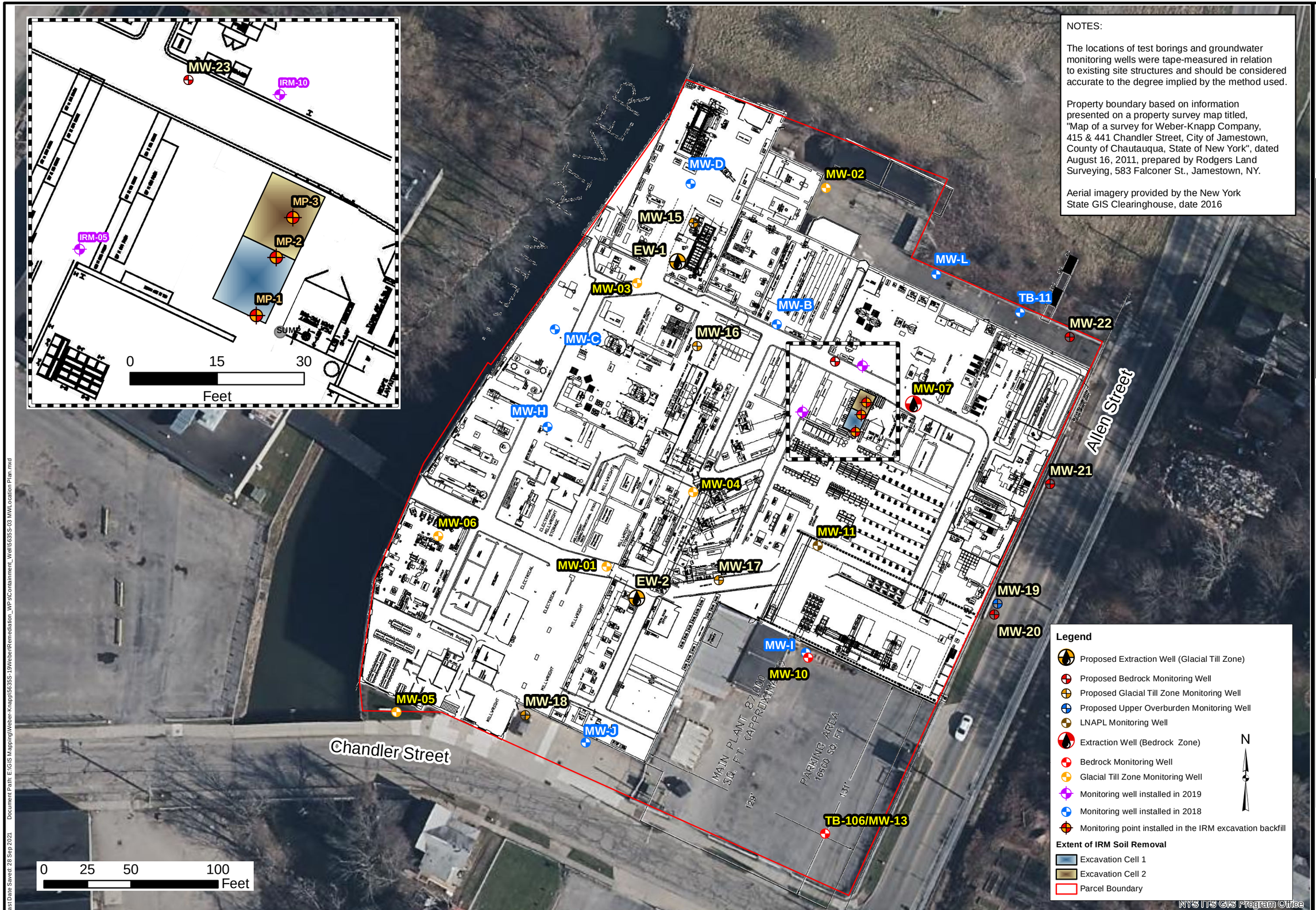
DATE 9-21-2021 DRAWN BY CAH SCALE Not to Scale	day DAY ENVIRONMENTAL, INC. Environmental Consultants Rochester, New York 14606	PROJECT TITLE 441 CHANDLER STREET JAMESTOWN, NEW YORK NYSDEC Site No. C907048 DRAWING TITLE Schematic of Bedrock Monitoring Well Construction	PROJECT NO. 5635S-19 FIGURE 6



NOTES:

The locations of test borings and groundwater monitoring wells were tape-measured in relation to existing site structures and should be considered accurate to the degree implied by the method used.

Property boundary based on information presented on a property survey map titled, "Map of a survey for Weber-Knapp Company, 415 & 441 Chandler Street, City of Jamestown, County of Chautauqua, State of New York", dated August 16, 2011, prepared by Rodgers Land Surveying, 583 Falconer St., Jamestown, NY.

Aerial imagery provided by the New York State GIS Clearinghouse, date 2016

Legend

- Proposed Extraction Well (Glacial Till Zone)
- Proposed Bedrock Monitoring Well
- Proposed Glacial Till Zone Monitoring Well
- Proposed Upper Overburden Monitoring Well
- LNAPL Monitoring Well
- Extraction Well (Bedrock Zone)
- Bedrock Monitoring Well
- Glacial Till Zone Monitoring Well
- Monitoring well installed in 2019
- Monitoring well installed in 2018
- Monitoring point installed in the IRM excavation backfill

Extent of IRM Soil Removal

- Excavation Cell 1
- Excavation Cell 2
- Parcel Boundary

N

DESIGNED BY	DATE
CAH	09-2021
DRAWN BY	DATE DRAWN
CAH	09-2021
SCALE	DATE ISSUED
AS NOTED	09-22-2021

day
DAY ENVIRONMENTAL, INC.
Environmental Consultants
Rochester, New York 14606

Project Title
441 CHANDLER STREET
JAMESTOWN, NEW YORK
NYSDEC SITE ID C907048

Drawing Title
Site Plan Showing Existing Monitoring Wells and Proposed Extraction and Monitoring Wells

Project No.
5635S-19

FIGURE 7

Last Date Saved: 28 Sep 2021 Document Path: E:\GIS Mapping\Weber-Knapp\5635S-19\Weber\Remediation_WP's\Containment_Wall\5635S-03 MWLocation Plan.mxd